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Cross-National Differences in Victimization

Disentangling the Impact of Composition and Context

Johan van Wilsem, Nan Dirk de Graaf, and Karin Wittebrood

Varying rates of criminal victimization across countries are assumed to be the outcome of country-level structural constraints that determine the supply of motivated offenders, as well as the differential composition within countries of suitable targets and capable guardianship. However, previous empirical tests of these ‘compositional’ and ‘contextual’ explanations of cross-national differences have been performed upon macro-level crime data due to the unavailability of comparable individual-level data across countries. This limitation has had two important consequences for cross-national crime research. First, micro-/meso-level mechanisms underlying cross-national differences cannot be truly inferred from macro-level data. Secondly, the effects of contextual measures (e.g. income inequality) on crime are uncontrolled for compositional heterogeneity. In this paper, these limitations are overcome by analysing individual-level victimization data across 18 countries from the International Crime Victims Survey. Results from multi-level analyses on theft and violent victimization indicate that the national level of income inequality is positively related to risk, independent of compositional (i.e. micro- and meso-level) differences. Furthermore, cross-national variation in victimization rates is not only shaped by differences in national context, but also by varying composition. More specifically, countries had higher crime rates the more they consisted of urban residents and regions with low average social cohesion.

Introduction

Studying the spatial distribution of crime and victimization is of great interest to both criminologists and sociologists. At various levels of aggregation (street blocks, neighbourhoods, cities, countries), many studies have documented that some areas are more crime-ridden than others (e.g. Gartner, 1990; Land *et al.*, 1990; Morenoff *et al.*, 2001; Wittebrood, 2000). Unlike American sociologists, European sociologists have recently not offered much attention to the way crime is distributed across places, despite the fact that sociology has been engaged with diverse social processes that are relevant for understanding this phenomenon, such as material inequality, social cohesion, and people’s lifestyles. In this study, we focus on differences between

countries in victimization rates and on why there is varying capacity across countries to maintain social order.

Similar to studies on the distribution of victimization at other levels of aggregation, researchers have offered contextual as well as compositional explanations for cross-national differences in victimization. Contextual explanations concentrate on the criminogenic aspects of the country’s social structure that determine the supply of motivated offenders. In this respect, strain/anomie theorists have argued that inequalities in the distribution of material resources induce offender motivation among the deprived. Therefore, crime rates will be higher with increasing inequality (Merton, 1957;

Blau and Blau, 1982). Previous cross-national studies found support for this assumption by reporting a positive association between country levels of income inequality and homicide (Gartner, 1990; Krahn *et al.*, 1986; Neapolitan, 1999).

On the other hand, in a compositional explanation of cross-national victimization differences, it is argued that countries vary systematically in the composition of lower-level units (e.g. individuals, communities) that are associated with victimization risk. An example of a compositional explanation for victimization is offered in Cohen and Felson's (1979) routine activity theory. In order to explain temporal changes in US crime rates since World War II, they argued that the dispersion of daily activities from the home to the public domain (e.g. through increasing female labour-force participation), combined with the increase in the prevalence of portable luxury goods caused an increase in criminal activity and victimization because of the greater criminal opportunities associated with this shift. Thus, Cohen and Felson (1979) used individual-level mechanisms to account for aggregate crime differences over time. However, varying rates across countries may result not only from differential composition of their micro-level components (individuals), but also from compositional heterogeneity of their meso-level components (e.g. communities, regions). In this respect, social disorganization theory (Shaw and McKay, 1942) offers an additive compositional explanation for cross-national crime research. This theory posits that the absence of social ties among community members stimulates criminal activity, as a result of the incapacity to enforce collectively shared norms. Thus, in compositional terms, countries may have higher victimization rates because they consist of more socially disorganized communities.¹ To summarize, strain/anomie theory offers a macro-level ('country') explanation for cross-national differences in victimization (through national levels of inequality), whereas social disorganization theory is concerned with meso-level ('neighbourhood/city') compositional differences, and routine activity theory with micro-level ('individual') compositional differences.

Although contextual and compositional explanations have been offered to account for cross-national variation in victimization (Gartner, 1990; Krahn *et al.*, 1986; Messner and Rosenfeld, 1997; Neapolitan,

1998), a serious drawback of its empirical tests is that they have been performed on country-level data, due to the absence of comparable individual-level crime data across countries. Because it is problematic to infer micro-level mechanisms from macro-level findings, it remains uncertain how to interpret observed effects of population composition in these studies. In addition, effects of national context on crime can also be called into question, whether they indicate the criminogenic impact of social structure, or rather if they are the outcome of unmeasured, systematic lower-level heterogeneity. For instance, does an association between income inequality and homicide indicate that the country's material context stimulates the activity of offenders, or is this result found because countries with high income inequality consist of systematically more people prone to victimization, due to their characteristics as a target? The sole availability of macro-level crime data has made it hard to answer two basic, yet important questions for the cross-national study of victimization:

- To what extent does cross-national variation in victimization result from compositional differences?
- Are country characteristics predictors of victimization rates, even after compositional differences are sufficiently taken into account?

In this paper, the limitations in previous cross-national studies to answer these two questions are overcome by using individual-level data from the International Crime Victims Survey (ICVS) on theft and violent victimization. For 18 countries, individual-level information on target characteristics, neighbourhood cohesion, and city size is combined with country-level data on the material context. In this way, it becomes possible to estimate the extent to which cross-national variation in victimization results from compositional differences. Also, the hierarchical data structure allows for stronger tests of country-level hypotheses derived from strain/anomie theory, since in estimating these effects on victimization individual-level heterogeneity can be controlled for. Furthermore, as an additional way to prevent putting too much confidence in country-level effects due to a neglect of intra-country differences, we control for structural features of the respondents' region of residence within the country. Therefore, we use three-level models to perform our

analyses, in which separate error terms are estimated at each level (individual, region, and country).

Furthermore, in this study a distinction will be made between theft and violent crime, and according to whether the victimization incident occurred in the target's neighbourhood or elsewhere. This distinction is used for two reasons. First, some risk factors do not operate in a general manner, but instead have restricted impact in specific settings or for specific crimes. For instance, social disorganization theory emphasizes that the degree of local community cohesion determines victimization. Therefore, it may be expected that its explanatory power does not include victimization incidents that occurred outside that area. Community cohesion may be a relevant compositional factor for the explanation of cross-national victimization differences, but only for the types of crime it is designed to explain. Secondly, other risk factors can be assumed to have similar effects across crime types, but because of different underlying mechanisms. For instance, living in a large city is expected to increase victimization risk inside and outside the target's neighbourhood. However, risk outside the neighbourhood may be increased, because physical mobility of the urban target through routine activities may bring him more often into disorganized areas than rural targets. On the other hand, risk within the neighbourhood may be higher for urban residents, because physical mobility of potential offenders may increase victimization chances especially for those living in close proximity to disorganized areas. Therefore, to allow for a more detailed interpretation of empirical findings, a distinction of victimization incidents by place of occurrence is necessary (Lauritsen, 2001).

Theory and Previous Research

In this study, we assume that country victimization rates are higher, the more motivated offenders and suitable targets converge in space and time under the absence of capable guardianship (Cohen and Felson, 1979). Moreover, it is assumed that the increase of one of these elements (motivated offenders, suitable targets, absence of guardianship) is

sufficient cause to result in higher rates of victimization, provided that the other two remain constant. The compositional explanation of cross-national victimization differences predicts that countries will have higher victimization rates, the more they consist of suitable targets and the less capable guardians are present. Drawing from strain/anomie theory (Merton, 1957; Blau and Blau, 1982), the contextual explanation predicts that the distribution of material resources at the country level determines the supply of motivated offenders. In short, the larger the pool of individuals with a small amount of material resources, or the more uneven the distribution of these resources across the population, the more motivated offenders are assumed to be present, and ultimately, the higher the rate of victimization.

The Compositional Explanation: Suitable Targets and Capable Guardians

In order to explain what determines target suitability and guardianship, a short overview is given of factors that determine target selection by offenders. In accordance with a rational choice theory of criminal action (Cornish and Clarke, 1986), it is assumed that the offender's selection of a victim is based on an evaluation of costs and benefits associated with specific targets, such that targets who provide the greatest yield are most likely to become victimized. In order to minimize costs, offenders are more likely to select targets that are routinely exposed to them (e.g. by similarity in their daily activities or by living in close proximity to the offender's home), and that are poorly protected. In addition, in order to maximize benefits, theft offenders are more likely to select targets that hold valuable possessions. Incorporating these assumptions into a compositional explanation of cross-national victimization differences leads to the expectation that *some countries have higher victimization rates than others because they are composed of targets that more often expose themselves, are more attractive to offenders, are less protected, and live in closer proximity to offenders* (compositional explanation). Thus, according to this explanation, micro- and meso-level mechanisms that determine target selection are responsible for shaping cross-national differences in amounts of victimization. Compared to previous research that

had to rely on macro-level data to test compositional explanations, this study offers a better test by using micro- and meso-level data available across countries. Below, these micro- and meso-level mechanisms are outlined in more detail.

Many empirical results support the tenability of the assumptions on rational target selection. In this respect, the study by Hindelang *et al.* (1978) stands out as the first attempt to give a theoretical account for the social stratification of victimization. With Cohen and Felson's (1979) routine activity theory, it shared an interest in how people's activities of everyday life provide criminal opportunities. However, rather than being engaged with the explanation of temporal variation in aggregate crime patterns, Hindelang *et al.* (1978) specified individual-level mechanisms to explain why some socio-demographic categories have higher victimization risk than others. They argued that specific groups, such as males, youngsters, and single people, run higher risks than others because they are more engaged in daily routine activities that bring them into contact with potential offenders (see also Cohen *et al.*, 1981; Wittebrood and Nieuwbeerta, 2000). More generally, these social categories are more likely to meet offenders, because delinquents are overrepresented in their own group and social interactions tend to be demographically segregated (e.g. young people tend to interact most frequently with other youngsters). Also, they are more vulnerable to burglary victimization, because the absence from their home leaves them with less capacity to guard their domestic property (Cohen and Cantor, 1981). Researchers using direct measures of routine activities found that activities performed in public domains (e.g. eating out) are positively related to victimization (Miethe *et al.*, 1987; Mustaine and Tewksbury, 1998). In sum, empirical studies testing routine activity theory indicate that exposure of person or property is an important determinant of victimization. In this study, we argue that individual exposure to offenders may offer a compositional explanation for cross-national victimization differences to the extent that it varies systematically across countries.

Furthermore, offenders are assumed to prefer unguarded targets to well-protected ones (Cohen *et al.*, 1981; Cornish and Clarke, 1986). In this respect, many studies have found that victimization risk is

partly determined by the amount of social control exercised among community members. Extending on Shaw and McKay's (1969 [1942]) social disorganization theory, several multi-level victimization studies have reported that structural constraints within communities, such as low economic neighbourhood status, serve as barriers to the realization of collective social control and ultimately lead to crime, independent of individual target characteristics (Lauritsen, 2001; Sampson *et al.*, 1997; Wittebrood, 2000). Analysing ICVS data from 15 countries, Lee (2000) reports that community cohesion is an important means of victimization prevention across social contexts.² Residents of neighbourhoods in which people 'help each other' were at lower risk than those living in neighbourhoods in which people 'go their own way'.

Finally, living in close proximity to motivated offenders increases risk, independent of the internal social structure of the target's neighbourhood (Cohen *et al.*, 1981; Morenoff *et al.*, 2001; Smith *et al.*, 2000). Criminogenic circumstances that are nearby may be associated with high victimization risk for two reasons. First, offenders active in specific places may tend to visit nearby areas to commit crimes because they are part of the same 'awareness space' (Brantingham and Brantingham, 1984; Smith *et al.*, 2000). Therefore, due to offender mobility targets living close to such areas will be at higher risk *in their own neighbourhood* ('spill-over effect'). Secondly, the closer they live to high-crime areas, targets have a higher chance of visiting these areas as they perform routine activities. Thus, due to target mobility, proximity to criminogenic circumstances may increase victimization risk *outside the target's neighbourhood*. In the current study, it is argued that individuals living near socially disorganized areas, such as large city residents (Cohen *et al.*, 1981; Sampson and Groves, 1989), are in closer proximity to criminogenic circumstances. Therefore, social disorganization theory is tested as a compositional explanation of cross-national victimization differences in two ways: countries may have different victimization rates because they vary in their amounts of cohesive communities (in which people are guarded against offenders), or because they vary in the extent to which people live close to socially disorganized areas.

Victimization Risk Factors: General or Restricted Impact?

Several of the risk factors mentioned above are assumed to have general impact. In other words, they affect both theft and violent victimization, and do so within and outside the target's neighbourhood. For instance, it is expected that males, young people, single people, and urban residents run overall higher risks than their counterparts. Moreover, we expect that the differential composition of countries with respect to these traits is responsible for shaping cross-national victimization differences. However, several other risk factors are not assumed to determine victimization in the same way under all circumstances. Rather, their expected impact is differentiated depending on the type of crime and the location of the incident. Accordingly, as compositional factors to account for cross-national differences, they are only potentially relevant for the types of victimization they are related to at the individual level. Therefore, a specification of these risk factors is necessary, not only for the prediction of individual risk, but also of cross-national differences. Below, this specification will be outlined shortly.

First, target attractiveness, which is often measured by household income or educational level, is appropriate to explain differential risk for theft crime, but not for violent crime. The reward for an offender's violent act is not assumed to be related to the target's possession of material resources. Thus, it is expected that higher levels of income and education are positively related only to a higher chance of theft victimization. Therefore, for the explanation of country-level differences in victimization, income and education are assumed to be compositional factors solely for theft. Thus, countries that consist of more high-income and higher-educated people are expected only to have higher theft rates than others, and not higher violence rates.

Secondly, exposure to offenders is often indicated by the performance of routine activities in the public domain, for instance paid labour and going out for entertainment (Miethe *et al.*, 1987; Mustaine and Tewksbury, 1998), as is also the case in this study. Most often, these activities are performed outside the target's neighbourhood, for instance in a city centre. Therefore, the amount of time spent within the neighbourhood is smaller for most targets

performing such activities, while time spent elsewhere increases. As a result, violent victimization becomes more likely outside the target's neighbourhood due to increased exposure in these places, whereas an encounter with a violent offender within the neighbourhood becomes less likely (Lauritsen, 2001). For theft crimes, the picture is somewhat different. The property that is carried by the target is exposed to offenders outside the neighbourhood through such activities, while personal guardianship over domestic property is smaller due to the absence from home. Therefore, leaving the house increases the chance of theft victimization, regardless of whether the incident takes place inside or outside the neighbourhood. Accordingly, as a compositional explanation for cross-national differences, we expect that the more countries consist of people who perform non-domestic activities in public places, the higher their rates of violent victimization outside the neighbourhood and theft victimization (inside and outside the neighbourhood), and the lower their rates of violent victimization within the neighbourhood.

Finally, the impact of social disorganization among community members within the target's living area is also assumed to be spatially bounded. The amount of community cohesion only determines theft and violent victimization risk within the neighbourhood. Logically, the amount of social cohesion in the target's neighbourhood does not determine his risk once he has crossed the boundaries of that neighbourhood and is somewhere else. Therefore, with respect to cross-national victimization differences, community cohesion is assumed to be a compositional factor solely for theft and violent victimization within the target's neighbourhood. Countries with high rates of victimization for these crime types are expected to consist of more targets who live in disorganized communities than other countries.

The Contextual Explanation: Motivated Offenders

Apart from the supply of suitable targets and the absence of guardianship, a country's victimization rate is also assumed to depend upon country-level structural constraints that determine the supply of motivated offenders. Following insights from

strain/anomie theory (Blau and Blau, 1982; Merton, 1957), it is argued that criminal activity is induced the more unequal material resources are distributed in a society. Theft and violence become more probable under such circumstances, as they are directed towards a reduction of relative deprivation (theft), and the expression of frustration caused by the inaccessibility of material resources (violence). Indeed, many cross-national studies have found a positive association between the amount of income inequality and national homicide rates (e.g. Gartner, 1990; Krahn *et al.*, 1986). For theft rates, empirical support for a relation with income inequality is absent (LaFree and Kick, 1986; Messner, 1986). However, these studies were based on official crime statistics, which are, to a larger extent than homicide figures, affected adversely by unequal measurement error caused by definition differences of theft and inconsistent reporting behaviour of victims to the police across nations (Zvekic, 1996). Therefore, they may give little indication of actual cross-national crime differences.

Furthermore, governmental efforts may reduce the inadequacy of resources among the poorest, and in turn, decrease the number of motivated offenders. Gartner (1990) found that government expenditure on social security was negatively related to homicide rates for males, females, and children, while Messner and Rosenfeld (1997) reported similar results for total homicide. In sum, we argue that *victimization rates will be higher the more uneven the distribution of material resources within a country or the more people within a country possess low levels of material resources*, as such circumstances stimulate the translation of deprivation into criminal action (contextual explanation). Through a multi-level design, the current study tests this contextual explanation of cross-national crime variation more thoroughly than has been the case in previous macro-level crime research, which did not control for compositional differences.

Table 1 presents an overview of the hypotheses tested in this article.

Methods and Measurement

Data

In order to test our hypotheses, we employ data from the ICVS that were collected between 1992

and 1997. The organization of the ICVS was coordinated by the Dutch Ministry of Justice, the British Home Office and the United Nations Interregional Crime and Justice Institute (UNICRI). The major advantage of the ICVS data is that question wordings as well as response categories are identical across countries, thereby optimizing cross-national comparability compared to traditional figures from police reports, which suffer from major definitional inconsistencies. For detailed documentation see Van Dijk *et al.* (1990), Van Dijk and Mayhew (1992), Mayhew and Van Dijk (1997), and Van Kesteren *et al.* (2000).

In most countries, national survey companies collected data by means of a computer-assisted telephonic interview (CATI). In Eastern European countries however, face-to-face-interviews were taken due to lower levels of telephone ownership. For each household, a random member of the household over 15 years of age was selected for the interview. The reference period for victimization is the year preceding the interview. The total sample involves 28250 respondents from 18 countries (see Table 2 for a list of the country sample). Thus, the average sample size per country is 1569. Although the ICVS has been conducted in more countries, our selection of countries is based on data availability with respect to the respondent's estimation of local community cohesion (i.e. the question if 'neighbours help each other') and, simultaneously, for region of residence within the country. In our view, both pieces of information are of central importance for a rigid test of both contextual and compositional explanations of cross-national victimization differences.

Within each country, respondents were divided according to their region of residence. These are so-called 'Nielsen-regions', named after the marketing company that devised this spatial categorization. In our data, 104 regions are distinguished. Thus, the mean number of respondents per region is 272, and the mean number of regions per country is almost six. Though less detailed than alternative spatial categorizations (such as city codes), this regional code is the only within-country spatial identifier available in the ICVS data. Nevertheless, it is suitable for our primary aim to test country-level hypotheses while simultaneously controlling for compositional heterogeneity. By taking account not only

Table 1. *Overview of hypotheses on individual victimization risk and cross-national victimization differences*

	Inside or outside neighbourhood			
	Theft		Violence	
	In	Out	In	Out
<i>Compositional explanation</i>				
Routine Activity Theory				
Exposure to offenders: sharing socio-demographic characteristics with offenders (male, young, single)	+	+	+	+
Exposure to offenders: performing out-of-home activities	+	+	—	+
Target attractiveness: educational level, income	+	+	0	0
Social Disorganization Theory				
Lack of guardianship: living in disorganized area	+	0	+	0
Lack of guardianship: close proximity to disorganized areas	+	+	+	+
<i>Contextual explanation</i>				
Strain/Anomie Theory				
Offender motivation: national levels of income deprivation	+	+	+	+

+ : higher individual risk and country rate; —: lower individual risk and country rate; 0: no relation.

of individual differences but also of regional differences, it is prevented that within-country variance is wrongfully attributed to the country-level. Therefore, our strategy to incorporate the region-level into our analyses is preferable over the option to ignore this level, and consider the country as the level-2 unit.

The average response rate for the countries with a telephone survey was 61 per cent. Countries with known response rates for face-to-face-interviews were Lithuania, Slovenia, and Poland (54, 56, and 96 per cent, respectively). In several Eastern European countries (Estonia, Georgia, and Slovakia) in which face-to-face interviews were also conducted, response rates were not calculated. Methodological studies have confirmed the comparability of studies with telephonic and face-to-face interviews (Dillman and Tarnai, 1988), as long as the same standards of fieldwork are applied, as is the case for the ICVS (Van Kesteren *et al.*, 2000).

Operationalizations

Victimization measures are used for two types of crime: theft and violence. A respondent was considered a theft victim if he or she had experienced a car theft, theft from a car, burglary, or personal theft in the year preceding the interview. Violent

victimization was constructed from respondents' reports on assault and robbery in the past year. In order to test whether certain risk factors operate in specific locations, victimization was distinguished according to the place of incident: inside the respondent's neighbourhood or elsewhere.³ Thus, four dependent variables were constructed:

- theft victimization in the neighbourhood;
- theft victimization outside the neighbourhood;
- violent victimization in the neighbourhood; and
- violent victimization outside the neighbourhood.

These four variables are dichotomous, with victims coded as 1, and non-victims 0. Table 2 summarizes the descriptive statistics of the dependent and independent variables. From this table, it can be concluded that the average victimization risk for theft in the neighbourhood is 8.5 per cent, while 6.4 per cent of all respondents experienced a theft outside the neighbourhood. For violence in the neighbourhood, the average risk is 2.0 per cent, while 2.3 per cent reported a violent victimization elsewhere.

In accordance with previous victimization studies (Hindelang *et al.*, 1978; Miethe *et al.*, 1987), proxies for the *exposure to offenders* in this study are gender, age, marital status, and two direct measures of routine

Table 2. *Descriptive statistics of dependent and independent variables (N=28250)*

Variable	Mean	SD	Min.	Max.
<i>Victimization (1-year prevalence rates)</i>				
Theft in neighbourhood	0.085	0.279	0	1
Theft elsewhere	0.064	0.244	0	1
Violence in neighbourhood	0.020	0.141	0	1
Violence elsewhere	0.023	0.150	0	1
<i>Individual characteristics</i>				
Male	0.472	0.499	0	1
Age	6.412	3.301	1	12
Single	0.366	0.482	0	1
Age finished education	5.760	3.120	0	1
High perceived income	0.490	0.500	0	1
Main activity: paid labour/education	0.611	0.488	0	1
Going out in the evening	3.061	1.287	1	5
Neighbours help each other	2.108	0.911	1	3
Urbanization of residence	2.692	1.595	1	6
<i>Regional characteristic (N=104)</i>				
Proportion of respondents who report neighbours help each other	0.476	0.176	0.09	0.90
<i>Country characteristics (N=18)</i>				
Income inequality	30.644	5.656	19.5	43.9
Expenditure on social welfare (% of GDP)	20.066	7.978	5.96	39.86

activities. With respect to age, respondents are categorized in one of twelve 5-year period age groups, that run from '15–19 years' to 'older than 70'. Whether respondents are single or cohabiting was determined via a question about the respondent's marital status. Respondents reporting not being married and not living together were considered single.⁴ Direct measures of routine activities that determine exposure include a respondent's daytime and night-time lifestyle patterns. First, respondents were asked to describe their main occupation. With this information, a dichotomous variable was computed that divides respondents' major daily activity between home centred (e.g. keeping home, retired) and non-home centred (paid labour, education). Secondly, a routine activity variable was computed that indicates how often respondents go out in the evening for recreational purposes. Response categories for this variable range from 'never' (1) to 'almost every day' (5).

To indicate *target attractiveness*, we use data on educational level and income position (Cohen *et al.*, 1981; Miethe *et al.*, 1987). To determine level of education, we used the age at which the educational

career was finished, a measure that consists of 12 categories, ranging from 'under age 15' to 'older than age 25'.⁵ For income, no objective measures are present, but instead we use information on the respondent's perception about whether his household's monthly income is above average (1) or not (0); 9 per cent of all respondents did not answer this question. In order to prevent large losses in sample size, perceived income was estimated in case of a missing value by performing logistic regression analyses that predicted perceived income as a function of gender, age (linear and quadratic), and educational level. Respondents with predicted odds above 1 of having a higher income were assigned a perceived income above the mean, others an income below the mean.

Information on the target's living environment is provided by each respondent, and is therefore represented in our analyses through individual-level predictors. Though living area characteristics may actually reflect meso-level characteristics in our research (e.g. neighbourhood, city), our data are not nested within such levels. To determine *social cohesion within the local community*, respondents were

asked whether the people in the area in which they reside mostly 'go their own way', or whether there is a 'mixture', or if people 'help each other' (coded as 1, 2, and 3, respectively). Interestingly, Eastern European countries appear to have significantly lower levels of average neighbourhood cohesion than Western countries ($p < 0.001$). Furthermore, to capture *the target's proximity to socially disorganized areas*, respondents were asked to estimate the size of their village or town. Response categories varied from 'less than 10,000' (1) to 'more than one million' (6); 9 percent of all respondents had missing values on this variable. For these respondents, country mean scores on urbanization were imputed.

At the regional level, an aggregated measure on neighbourhood cohesion is used. For each region, the proportion of respondents who report that their neighbours 'help each other' is calculated. Thus, higher values on this variable indicate many people living in cohesive communities within a region, and therefore lower average proximity to disorganized areas for the region's general population. Since in cohesive regions fewer offenders are assumed to be active, targets are less likely to converge with them, both within and outside their own neighbourhood. From our data, we found that between regions within countries there is significant variation with respect to neighbourhood cohesion ($p < 0.001$), with values ranging from 9 to 90 per cent.

In order to account for the supply of motivated offenders, two country-level measures on income deprivation are used. First, in accordance with previous research (Gartner, 1990; Krahn *et al.*, 1986; Neapolitan, 1998), *relative income deprivation* was measured by the Gini index for income inequality between households (World Bank, various years).⁶ Due to availability restrictions, these data refer to a year in the early or mid-1990s. Secondly, following Gartner (1990), *absolute income deprivation* was measured by the total amount of expenditure on social security as a percentage of GDP (see Table 3 for an overview of the country scores on these two variables). Lower levels on this variable indicate higher levels of deprivation. Data on this measure were obtained from the website of the International Labour Office on the cost of social security between 1990 and 1996.⁷ Depending upon availability, they refer either to the year the

ICVS-survey was conducted in a country or the previous year.

Method

As the ICVS data involve individuals clustered in 18 countries and 104 regions, multi-level modelling techniques are used (Goldstein, 1995). By employing MLWin software, a three-level model was specified, in which separate coefficients are estimated at the individual level (level 1), the region-level (level 2), and the country-level (level 3). Thus, contrary to traditional regression techniques, the multi-level model takes account of the layered character of the data by separately employing three sub-models. It adjusts for the correlation between the error components of the separate levels, that results from the hierarchical data structure. Since our dependent variables are dichotomous (victim/no victim), logistic multi-level models are appropriate. In these models, the log odds of victimization for individual I in region J and country K are defined as $\text{logit}(\text{victimization}_{ijk}) = \log(p_{ijk}/(1-p_{ijk}))$.

At the individual level (level 1), the model is specified in the following form:

$$Y_{ijk} = \gamma_{0jk} + \Sigma \beta_p(X_{ijk}) + \varepsilon_{ijk}, \quad (1)$$

where γ_{0jk} is the model's intercept, $\Sigma \beta_p(X_{ijk})$ the logistic regression coefficients for the individual-level explanatory variables, and ε_{ijk} the level-1 error term. In the logistic multi-level model, individual errors are assumed to be distributed as a binomial variable. Therefore, this term is set to 1.

The level-2 (region) and level-3 (country) models read as follows:

$$\gamma_{0jk} = \nu_{0k} + \beta_q(X_{jk}) + \mu_{0jk} \quad (2)$$

$$\nu_{0k} = \delta_{00} + \Sigma \beta_r(X_k) + \tau_{0k} \quad (3)$$

Equation (2) includes a region-specific intercept ν_{0k} , a regression weight β_q for the regional variable X_{jk} (the proportion of respondents reporting neighbours help each other), and an error component μ_{0jk} . Equation (3) includes a grand mean (δ_{00}), which indicates the average log-odds for the entire sample, regression coefficients $\Sigma \beta_r$ for the explanatory country-level variables X_k (income inequality and expenditures on social security), and a macro-level error component τ_{0k} , which indicates the

magnitude of cross-national differences in victimization. The error components μ_{0jk} and τ_{0k} are assumed to follow a normal distribution (Goldstein 1995).

In order to test the compositional and contextual explanations for cross-national differences, our analytic strategy is twofold. First, in order to test whether associations between country characteristics and victimization rates truly reflect country-level effects, we will evaluate whether these effects also hold after heterogeneity within countries is controlled for. Secondly, in order to test the compositional explanation, we will evaluate if the country-level variance term (τ_{0k}) becomes smaller after compositional differences are accounted for. In that case, countries with high levels of victimization consist of more suitable targets and less capable guardians than countries with low victimization rates.

Results

First, we offer a description of country victimization rates. In general, high victimization rates are found in Estonia, with the highest rates for violent victimization (3.9 and 3.3 per cent within and outside the target's neighbourhood, respectively) and the next-to-highest rate for theft in the neighbourhood (11.7 per cent) (Table 3). In contrast, Austria displays the lowest rates for each of the four crime types examined here, with scores of 0.7 per cent for violent victimization within and outside the neighbourhood, and 2.9 and 2.7 per cent for theft victimization (within and outside the neighbourhood). Sweden, Belgium, and Switzerland are also countries with relatively low victimization rates overall. Among the countries with high scores on specific types of victimization are Australia and Georgia (theft within and outside the neighbourhood), Lithuania and New Zealand (theft and violence within the neighbourhood), Poland (theft and violence outside the neighbourhood), and Slovenia (violence within and outside the neighbourhood). Overall, our results indicate that Eastern European countries had significantly higher victimization rates for violence in the neighbourhood ($p < 0.01$) and theft in the neighbourhood ($p < 0.10$).

Testing the Contextual Explanation for Cross-National Victimization Differences

Our first major aim is to test country-level hypotheses while simultaneously taking compositional differences into account. Table 4 shows the results of multi-level logistic analyses predicting the likelihood of victimization. For each of the four types of victimization, two separate equations were modelled. First, to explore if there is an association at all between victimization and national material context (income inequality and governmental expenditures on social security), the results in model 1 refer to analyses that only include these country characteristics. Then, to examine if associations between country-level characteristics and victimization still hold after compositional heterogeneity is controlled for, the results are reported for analyses that not only include country characteristics, but also individual and regional characteristics (Model 2).

The results in model 1 (Table 4) suggest that income inequality is indeed positively related to theft victimization within and outside the target's neighbourhood, and to violent victimization outside the neighbourhood. To give an indication of the magnitude of the association, let us examine the results for violent victimization outside the neighbourhood. For this type of crime, the risk increases with a factor 1.07 ($=\exp(0.072)$) for each unit increase in the Gini index of income inequality. For example, comparing a country with an income inequality score of 25 (Sweden) with one that has an inequality score almost two standard deviations higher (England and Wales), it follows that the average risk for an inhabitant of these countries varies from 1.5 per cent for the first to 3.2 per cent for the latter.⁸ Furthermore, governmental expenditure on social security is negatively related to victimization, yet solely for theft (inside and outside the neighbourhood). Again, to indicate the magnitude of this effect, we compare two countries that differ approximately two standard deviations in their expenditures on social security, Lithuania (14.66) and the Netherlands (31.08), now with respect to theft outside the neighbourhood. The average risk for an inhabitant of Lithuania is 7.1 per cent, while for the Netherlands the average risk is 5.7 per cent.

Table 3. *List of countries, survey year, sample size, country characteristics, and victimization rates*

Country	Survey year	Sample size	Victimization ^a					
			Inside or outside neighbourhood					
			Country characteristics		Theft		Violence	
			Inequality	SS spending ^b	In	Out	In	Out
Australia	1992	2006	35.2	11.75	0.109 (4)	0.078 (2)	0.022 (9)	0.030 (6)
Austria	1996	1507	23.1	25.08	0.029(18)	0.027(18)	0.007(18)	0.007(18)
Belgium	1992	1485	25.0	28.47	0.055(14)	0.038(17)	0.013(14)	0.011 (15)
Canada	1992	2152	31.5	21.09	0.106 (6)	0.072 (6)	0.027 (4)	0.030 (5)
Czech Rep.	1992	1262	26.6	17.32	0.096 (8)	0.073 (5)	0.026 (5)	0.009(16)
Eng & Wales	1992	2001	36.1	19.22	0.104 (7)	0.073 (4)	0.015(12)	0.028 (7)
Estonia	1995	1173	35.4	16.49	0.117 (2)	0.067(11)	0.039 (1)	0.033 (1)
Georgia	1996	1137	—	5.96	0.108 (5)	0.076 (3)	0.022(10)	0.027 (9)
Italy	1992	2024	31.2	12.24	0.077(12)	0.066(12)	0.008(17)	0.012(14)
Lithuania	1997	1176	32.4	14.66	0.137 (1)	0.067(10)	0.029 (3)	0.017(12)
Malta	1997	999	—	13.24	0.037(17)	0.070 (7)	0.012(15)	0.022(11)
Netherlands	1992	2000	32.6	31.08	0.077(11)	0.068 (9)	0.015(13)	0.031 (4)
New Zealand	1992	2048	43.9	18.89	0.111 (3)	0.062(13)	0.023 (6)	0.027 (8)
Poland	1992	2020	32.9	21.36	0.079(10)	0.091 (1)	0.023 (7)	0.031 (3)
Slovakia	1992	508	19.5	21.21	0.059(13)	0.069 (8)	0.022(11)	0.014(13)
Slovenia	1997	2053	26.8	17.34	0.093 (9)	0.052(14)	0.030 (2)	0.033 (2)
Sweden	1992	1707	25.0	39.86	0.054(15)	0.043(15)	0.023 (8)	0.008(17)
Switzerland	1996	992	33.1	25.92	0.044(16)	0.042(16)	0.009(16)	0.024(10)

^aRank score between parentheses^bSocial security expenditure as a percentage of GDP.

Next, the results in Model 2 make clear that, notwithstanding extensive controls for compositional differences in individual and regional characteristics, a strong positive relation remains between income inequality and victimization (except for violence in the neighbourhood). Furthermore, the negative association between theft outside the target's neighbourhood and expenditure on social security remains, but drops to non-significance for theft within the target's neighbourhood. Therefore, these results especially support the assumption that higher country levels of income inequality stimulate victimization, net of compositional differences.

Individual and Region-Level Predictors of Risk

In this section, the effects of individual and regional structural features on victimization from Table 4 are discussed. From these results, it can be concluded

that there are several similarities and differences in the predictors of risk for the various types of victimization. First, our finding that age is inversely related to victimization risk for each of the four types of crime studied here is in line with Hindelang *et al.*'s (1978) prediction that social groups containing the largest shares of the offender population run higher victimization risk because socio-demographic categories tend to interact with members of their own group, and therefore have more chance to converge with offenders. Possibly, young people are more likely to come into contact with delinquents, since they interact mostly with other youngsters who make up a disproportionate share of the offender population. However, according to Hindelang *et al.*'s (1978) proposition, consistently higher victimization risks were also expected for males and single people, as these groups also contain relatively many offenders. However, higher risks for males were only found for violent victimization

Table 4. Multi-level results for theft victimization and violent victimization, within and outside the target's neighbourhood

	Inside or outside neighbourhood							
	Theft				Violence			
	In		Out		In		Out	
	1	2	1	2	1	2	1	2
Intercept	-2.509**	-2.716**	-2.719**	-3.013**	-3.968**	-4.049**	-3.822**	-4.693**
Country								
Income inequality	0.043*	0.39**	0.33**	0.33**	0.013	0.019	0.72**	0.65**
Expenditures on social welfare	-0.018~	-0.013	-0.013~	-0.013~	-0.008	-0.004	-0.12	-0.008
Region								
Proportion of people who report neighbours help each other		-1.217**		-1.350**		-1.150*		-0.141
Individual								
Male		-0.025		-0.120*		-0.032		0.517**
Age		-0.053**		-0.082**		-0.095**		-0.146**
Single		-0.013		0.099		0.512**		0.178
High education		0.027**		0.031**		0.018		0.032*
High perceived income		0.160**		0.212**		0.122		0.049
Main activity: paid labour/education		0.132*		0.109		-0.382**		0.346**
Going out in the evening		0.046*		0.066**		0.007		0.056
Neighbours help each other		-0.203**		-0.077*		-0.246**		-0.046
Size of town		0.218**		0.122**		0.070*		0.102**

~p < 0.10, *p < 0.05, **p < 0.01.

outside the neighbourhood, while singles solely run higher risk for violence within the neighbourhood.

With respect to target attractiveness, it was found that respondents have a higher chance of becoming the victim of theft the more years of education they undertook and if the household income was perceived to be above the mean. For violent victimization, this was not the case. This supports the argument that for violent victimization, income and education are hardly relevant characteristics for offenders to discriminate between targets in terms of expected gain, while for theft victimization they are.

Directly measured routine activities that tap the dimensions of exposure to offenders and (for theft) personal guardianship over domestic property – going out in the evening for entertainment and the performance of non-domestic main activities (work, school) – were differentially associated with the four types of victimization. The likelihood of theft within the neighbourhood is higher for those performing paid labour or following a full-time education and for people going out in the evening, probably because a regular absence from home reduces the capacity to guard domestic property. For violence, these activities reduce the respondent's time spent in the neighbourhood (assuming these routine activities are performed elsewhere), and are therefore expected to reduce risk within the neighbourhood due to lower exposure to offenders in the neighbourhood. However, this was found to be the case for paid workers and students, but not for frequent visitors of night-time entertainment. For incidents of theft and violence outside the neighbourhood, non-domestic routine activities should increase the likelihood of victimization due to increased exposure to offenders outside the neighbourhood. Our results provide some support for this hypothesis. Whereas theft outside the neighbourhood is higher for paid workers and students, violence outside the neighbourhood is more likely for frequent participants in night-time activity.

Furthermore, the risk of becoming a victim within the neighbourhood is smaller for targets who report themselves as living in an area in which neighbours help each other, both for theft and violent victimization. This finding offers support to the assumption that residents of cohesive communities enjoy higher levels of guardianship

through collective social control compared to residents living in disorganized communities (Lee, 2000; Sampson *et al.*, 1997). Violent victimization outside the neighbourhood was not affected by social cohesion within the target's local community. This finding is in line with our prediction that community cohesion does not offer protection against offenders beyond the confines of the neighbourhood. Unexpectedly however, theft risk outside the neighbourhood appeared to be slightly smaller for inhabitants of cohesive communities.

Furthermore, for nearly each type of victimization, risks are higher for residents of urban areas and inhabitants of regions with low proportions of average community cohesion. This finding supports the hypothesis on proximity to criminogenic circumstances. Residents of large cities and inhabitants of regions with many socially disorganized areas may run higher risks of victimization outside their neighbourhood, because they are the most likely to enter socially disorganized areas once they leave their own neighbourhood. In addition, it suggests that for victimization within the neighbourhood, not only neighbourhood characteristics determine individual risk, but also aspects of a larger social structure, i.e. the city and region of residence. Possibly, due to closer proximity to motivated offenders, urban residents and inhabitants of disorganized regions may be most likely to be frequented by criminals, independent of their neighbourhood's own control structure (Morenoff *et al.*, 2001).

Determining the Separate Impact of Compositional and Contextual Differences

Our next aim is to disentangle the separate contribution of compositional and contextual differences on cross-national victimization variance. In order to achieve this, country-level victimization scores are estimated along three additive multi-level models. First, an 'empty' multi-level model is fitted, in which a grand mean (representing the average risk for all respondents) is estimated as well as a country-level and region-level variance component. Here, the country-level variance component represents 'uncontrolled' cross-national victimization differences. Secondly, by adding statistical controls for individual and regional characteristics in the subsequent model (e.g. gender, age, regional proportion

Table 5. *Country-level intercept variance (region-level variance in parentheses)*

	Inside or outside neighbourhood			
	Theft		Violence	
	In	Out	In	Out
Empty model	0.179* (0.140**)	0.052 (0.152**)	0.142* (0.094~)	0.226* (0.098*)
Controlled for compositional differences	0.116* (0.079**)	0.035 (0.154**)	0.085~ (0.071)	0.235* (0.054)
Controlled for compositional and contextual differences	0.048~ (0.079**)	0.000 (0.149**)	0.075 (0.066)	0.107* (0.058)

~p < 0.10, *p < 0.05, **p < 0.01.

of respondents reporting neighbours help each other), changes in unexplained country-level variance compared to the 'empty' model represent the extent to which compositional differences can explain variation between countries in victimization rates. Thirdly, country characteristics are added to estimate effects of national context (income inequality, governmental expenditures on social security), and assess their ability to explain cross-national victimization differences.

Table 5 gives an overview of the country-level variance components for the three multi-level models across the four types of victimization. For theft victimization in the neighbourhood, controlling for individual and regional characteristics decreases cross-national differences in average victimization risk, since the country-level variance drops from 0.179 to 0.116 (35 per cent). Indeed, compositional differences are partly responsible for bringing about variation in victimization at the country-level. However, for theft outside the neighbourhood, the amount of country-level variance is so limited as to be insignificant. Nonetheless, the country-level variance term drops from 0.052 to 0.035 (33 per cent) after controlling for individual- and region-level heterogeneity. For violent victimization, controlling for compositional differences leads to a notable decrease in cross-national victimization variation of 40 per cent (0.142–0.085/0.142). For violent victimization outside the neighbourhood, the compositional explanation is not adequate, considering the fact that the country-level variance

term does not decrease after compositional differences are taken into account. In sum, for most types of victimization examined here the compositional explanation seems to have considerable merit.

In comparison, the impact of national context on cross-national differences in victimization rates seems larger, however. For three out four types of victimization, the variance between countries becomes substantially smaller after contextual differences are controlled for. For theft in the neighbourhood and violence outside the neighbourhood, cross-national variation decreases with more than 50 per cent when country levels of income inequality and expenditures on social security are taken into account. For theft outside the neighbourhood, cross-national victimization differences have actually completely disappeared once country characteristics are controlled for. Only for violent victimization in the target's neighbourhood, the observed decrease in country variance is more modest: 12 per cent.

Finally, to offer more detail on which specific individual and regional characteristics are relevant compositional factors, additional analyses were carried out. In Table 6, the results from these analyses are presented. The first row of this table indicates the country-level intercept variance (τ_{0k}) for the model including individual and regional characteristics (also represented in Table 5, second row). The lower rows reflect this variance for the same model, but for each row a different variable was excluded from the analyses. Thus it is possible to evaluate if a specific individual or regional variable

Table 6. *Country-level intercept variance after exclusion of single variables*

	Inside or outside neighbourhood			
	Theft		Violence	
	In	Out	In	Out
Full model	0.116*	0.035	0.085~	0.235*
Male	0.116*	0.034	0.085~	0.241*
Age	0.122*	0.047	0.091~	0.271*
Single	0.116*	0.035	0.078	0.233*
Age at which education finished	0.121*	0.032	0.100~	0.203*
Perceived high income	0.110*	0.033	0.084	0.237*
Main activity: paid labour/education	0.116*	0.035	0.079	0.232*
Going out in the evening	0.118*	0.035	0.084	0.239*
Neighbours help each other	0.111*	0.033	0.088~	0.242*
Town size	0.203*	0.058	0.099~	0.257*
Regional proportion of respondents who report neighbours help each other	0.139*	0.063	0.111*	0.237*

~p < 0.10, *p < 0.05, **p < 0.01.

is important in bringing about cross-national differences in victimization. If the variance term becomes higher compared to the 'full' model after the exclusion of a particular individual or regional indicator, then it is responsible for a portion of cross-national variation in victimization. In that case, part of the reason that some countries have higher victimization than others lies in the fact that they are composed of relatively more people/regions with that crime-inducing trait. On the other hand, if τ_{0k} remains constant compared to the full model, then the excluded indicator is not a relevant compositional factor, either because it does not exert any influence on the individual level, or because countries do not vary systematically in their composition with respect to that indicator. Furthermore, if the unexplained variance between countries is reduced by excluding a specific variable, the compositional explanation operates contrary to expectations: countries with high victimization risk are composed of less people or regions with a crime-inducing characteristic than low-risk countries.

From Table 6, it can be observed that most variables are not important as compositional factors, since the proportion of unexplained variance between countries is hardly affected by their exclusion. In this table, major changes compared to the

full model are represented in bold print. Most importantly, town size and the regional proportion of respondents reporting that neighbours help each other are relevant compositional factors for nearly all four types of victimization distinguished here. Thus, the more countries are composed of urban residents, and of regions with low average social cohesion, the higher their victimization rates. These results indicate that the major compositional factor that distinguishes high-risk countries from low-risk countries is the proximity to criminogenic circumstances.

In addition, several crime-specific compositional factors can be distinguished. For victimization outside the neighbourhood (theft and violence), age explains some of the variation in victimization between countries. Thus, countries with high levels of theft and violence outside the neighbourhood are composed of more young people than other countries. Furthermore, educational level seems to be a compositional factor for violence within the neighbourhood, while a reversed composition effect was found for violence outside the neighbourhood. Despite the fact that more years of education are associated with slightly higher risk at the individual level, the populations of countries with high levels of violence have lower levels of education than those of low-risk countries.

Conclusion

Our study indicates that cross-national differences in victimization rates can partly be understood as a product of varying material context. Especially for income inequality, highly significant positive effects were found for theft as well as violent victimization. This finding is in accordance with Merton's (1957) and Blau and Blau's (1982) versions of strain/anomie theory, in which it is assumed that offenders will be most motivated to commit crimes within a context of unequal distribution of material resources. In such circumstances, high rates of victimization result from the higher likelihood that the deprived will aim to overcome blocked opportunities through theft, or express their frustration about the inaccessibility of resources through violence. Although previous cross-national studies have also reported a positive association between income inequality and crime (Gartner, 1990; Krahn *et al.*, 1986; Neapolitan, 1998), this study is the first to do so while simultaneously controlling for compositional heterogeneity between countries through a multi-level design. As such, it has subjected hypotheses from strain/anomie theory to stronger tests than previous cross-national studies, which were fully based on country-level data due to the unavailability of alternative options. Another macro-level finding from our multi-level analyses was that there was little support for the victimization-enhancing effect of low country-level expenditure on social security, except for theft outside the target's neighbourhood. This contrasts with previous findings from (macro-level) cross-national studies by Gartner (1990) and Messner and Rosenfeld (1997). In future studies, the use of longitudinal cross-national data provide an additional way in which strain/anomie theory could be evaluated, by examining if inequality and poverty changes are followed by expected changes in victimization rates. This would allow for an even more rigorous causal interpretation of the relationship.

Due to the fact that previous cross-national studies were based on macro-level data, inferences about the impact of differential population composition on crime were hard to draw. Therefore, another innovation offered by this study's combination of individual-, region- and country-level data is the possibility of disentangling the impact of country (material) context and country composition in

shaping victimization rates. In this respect, we found that context and composition are both of importance, although the impact of country context (and especially, income inequality) was larger in most instances. Nevertheless, for three out of four types of victimization, cross-national differences dropped with one third or more after compositional heterogeneity was taken into account. More specifically, with respect to composition, it appears that systematic cross-national differences in the extent to which people live close to disorganized areas partly explains varying victimization rates. Higher victimization rates were found the more countries consisted of urban residents and regions with low average social cohesion. Furthermore, though related to victimization at the individual level, non-domestic activities such as working for pay and going out for recreation did not play a role as compositional factors for the explanation of cross-national differences. This is in contrast with Cohen and Felson's (1979) prediction that a country will have higher crime rates, the more the routine activities of its population offer criminal opportunities by spending less time at home.

An evaluation of our results also requires us to mention the limitations of this study. First, our selection of countries was small, and motivated by availability of data on a range of basic indicators. It is hard to predict if different or broader selections of countries might reveal other results. Also, the average sample size in participating countries was relatively small considering that victimizations are rare events. Furthermore, meso-level variance within countries was modelled through a distinction of regions. It may be that incorporating this level by using more detailed spatial identifiers (e.g. city codes) may produce different results, although there is no direct reason for suspecting this. Nevertheless, in order to evaluate the robustness of the current results, future studies may engage in analyses using a larger selection of countries, larger sample sizes per country, and alternative spatial categorizations within countries. Finally, adding more detailed measures for theoretical concepts, such as exposure through routine activities and neighbourhood cohesion, may in general improve the prediction of victimization.

Despite these limitations, our results underline the relevance of studying micro-, meso-, and macro-level

mechanisms for the explanation of victimization, be it cross-national differences or individual risk. Individual victimization seems to be determined by multiple social contexts, while the composition of lower-level units are partly responsible for bringing about cross-national differences. One of the ways in which our understanding of these processes would be further enhanced is by specifying the possible interplay between individual and higher-level mechanisms (e.g. at the neighbourhood level), for instance by examining if out-of-home routine activities are more risky within specific contexts.

Notes

1. Informal control is a community-level phenomenon. In neighbourhood research on crime (e.g. Sampson *et al.*, 1997), social disorganization theory serves as a contextual explanation, since the neighbourhood is the highest level of analysis in these studies. However, in cross-national research, neighbourhoods are units within countries. Therefore, in this study the theory is appropriate as a compositional explanation.
2. Lee (2000) also replicated his findings with ICVS data from 12 city surveys across the world (e.g. Moscow, Buenos Aires, and Beijing).
3. Respondents reporting criminal incidents that occurred abroad were not considered victims in this analysis.
4. For Estonia, this question was not included. For this country, marital status was determined through household size. Respondents living in a one-person household were considered to be single, others were considered as non-single.
5. For 7 of the 18 countries, this measure on education was not available and another was used. We recoded the answers to these alternative questions into our measure of age at which the educational career was finished. For Poland, this concerned a question on the respondent's level of education. For Switzerland, Austria, Malta, Georgia, Slovenia, and Lithuania, a measure on the number of years of education was recoded.
6. For Georgia and Malta, no data were obtained for this measure, and therefore mean values were imputed for these countries.
7. See <http://www.ilo.org/public/english/protection/socsec/publ/css/cssindex.htm>
8. The likelihood of victimization p for individual i can be calculated here as follows:

$$p_i = \exp(X_k + \beta_k(X_k - X_{k,i})),$$

where X_k is the mean value of the country-level variable, $X_{k,i}$ the score on this variable for the country of individual i , and β_k the regression weight associated with this variable.

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